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-1-CLAIMS

1. A communications system for linking participants at two separate locations,
5 comprising:
first and second locations each provided with at least one real time image capturing device,
at least one image projecting device, an observation zone for occupation by a participant
at that location and a two-way mirror through which images are viewed, the image
capturing device(s) at each location being:
- 10 (a) arranged to view any participant occupying the home location observation zone
directly or indirectly along a line of sight which passes through the two-way mirror,
and
(b) linked to the image projecting device at the other location whereby the captured
image is transmitted from the home location to the remote location and projected
15 at the remote location for viewing through the corresponding two-way mirror, and
at least one location being provided with visual depth-cue means located on the opposite
side of the two-way mirror to the observation zone, the visual depth-cue means being in
the form of one or more physical objects visible through the two-way mirror from the
observation zone so that the remotely derived image of a remote participant is seen through
20 the two-way mirror in superimposed relation within a three-dimensional setting afforded
by said visual depth-cue means.
2. A system as claimed in Claim 1 in which the object or objects are located at
positions forwardly and/or rearwardly of the position of the remotely-derived image.
- 25 3. A system as claimed in Claim 1 in which the setting comprises a chair, the back of
which is located rearwardly of the position of the remotely-derived image.

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4. A system as claimed in Claim 1 in which the setting comprises a desk, table, counter, console or the like located forwardly of the position of the remotely-derived image.

5 5. A system as claimed in Claim 1 in which the setting comprises a lectern located forwardly of the position of the remotely-derived image.

6. A system as claimed in Claim 1 in which the setting comprises a stage.

10 7. A system as claimed in Claim 6 in which a substantially full height image of the remote participant is projected for viewing against the stage setting.

8. A system as claimed in Claim 7 in which the image is positioned at a location intermediate the forward and rearward extremities of the stage setting.

15 9. A system as claimed in Claim 6 or 7 in which the stage setting includes a background located rearwardly of the position of the remotely-captured image.

20 10. A system as claimed in any one of Claims 1 to 9 in which the setting comprises a background located rearwardly of the position of the remotely-derived image, means being provided for producing an image on the background for viewing through the two-way mirror.

25 11. A system as claimed in any one of Claims 1 to 10 in which the remotely-derived image is projected so that, from the observation zone, it represents the remote participant as a substantially life-size, optionally substantially full height, image in relation to the setting.

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12. A system as claimed in any one of Claims 1 to 11 including means for illuminating one or more physical objects constituting said depth-cue means.

13. A system as claimed in any one of Claims 1 to 12 in which the remotely-captured image of a participant comprises a background which is substantially non-visible when viewed through the two-way mirror by a participant at the home location.

14. A system as claimed in any one of Claims 1 to 13 in which the two-way mirror is inclined relative to the line of sight of a participant stationed in the observation zone.

15. A system as claimed in Claim 14 in which the two-way mirror is inclined about a horizontal axis.

16. A system as claimed in Claim 15 in which the remotely-captured image is incident on the two-way mirror from a location below the two-way mirror.

17. A system as claimed in Claim 15 in which the remotely-captured image is incident on the two-way mirror from a location above the two-way mirror.

18. A system as claimed in any one of Claims 1 to 17 including means for adjusting the image-capturing device(s) and/or the participants so that the eye-level of the participant is substantially aligned with the line of sight of the image-capturing device viewing the participant.

19. A system as claimed in any one of Claims 1 to 18 in which the arrangement is such that the remotely-captured images are displayed so as to create a stereoscopic visual effect when viewed from the home location observation zone.

20. A system as claimed in Claim 19 in which the remotely-captured images are processed using light polarising elements to form pairs of images having different polarisations so that a stereoscopic image of the remote participant is seen when viewed at the home location using polarised glasses whereby the images viewed at the home
5 location using a viewer, such as shutter glasses, synchronised with the display of the alternating images.

21. A system as claimed in Claim 19 in which the stereoscopic visual effect is produced by alternating between images of the remote participant(s) captured from different
10 viewpoints.

22. A system as claimed in any one of Claims 1 to 18 in which at least one of said locations is provided with at least two image-capturing devices for viewing the participant(s) at that location from different angles and in which at least one of said
15 locations is provided with at least two image-projecting devices linked to the remote image-capturing devices.

23. A system as claimed in Claim 22 in which the arrangement is such that the remotely-captured images are displayed so as to create a stereoscopic effect when viewed
20 from the home observation zone.

24. A system as claimed in Claim 22 or 23 in which the remotely-captured images are projected onto a retroreflective screen located at the opposite side of the two-way mirror to the observation zone whereby the remotely-captured images are viewed in
25 retroreflection at the observation zone.

25. A system as claimed in any one of Claims 1 to 24 including means for tracking the eye position of a participant in the observation zone and means for adjusting the image-projecting devices in dependence upon such tracked positioning.

5 26. A system as claimed in Claim 25 in which the tracking means includes an item of headwear to be worn by a participant in use of the system.

10 27. A system as claimed in Claim 25 in which the tracking means includes camera means for observing the participant and means for analysing the images captured thereby to determine eye positioning.

15 28. A system as claimed in any one of Claims 1 to 27 including means for correlating actions of a participant at the remote location with one or more physical objects in the home location three dimensional setting so as to produce the impression of interaction of the image observed at the home location with such physical object(s).

20 29. A communications system for linking participants at two separate locations, comprising:

a first location provided with at least one real time image capturing device and a zone for occupation by one or more participants, the image-capturing device being arranged to view that zone;

25 a second location provided with at least one image projecting device linked to the image-capturing device at said first location, an observation zone for occupation by one or more participants at the second location, a three dimensional setting with visual depth cue means in the form of one or more physical objects viewable from that observation zone and two-way mirror means interposed between that observation zone and the three dimensional setting,

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the arrangement being such that the captured image is transmitted from said first location to the second location and is projected at the second location for viewing of the remote participant(s) through the corresponding two-way mirror means in superimposed relation with the three dimensional setting.

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30. A system as claimed in Claim 29 in which a substantially full height image of the remote participant is projected for viewing within the three dimensional setting.

10 31. A system as claimed in Claim 30 in which the setting comprises a stage and means for displaying a further image constituting a visual depth cue means.

32. A system as claimed in any one of Claims 29 to 31 incorporating the features of any one of Claims 1 to 28.

15 33. A system as claimed in any one of the preceding claims in which the visual person(s) to person(s) link between locations is supplemented by a computer link between the locations.

20 34. A system as claimed in any one of the preceding claims in which, in addition to said first and second locations, there is at least one further location so arranged that a person at each location is able to communicate at least visually with a person at at least one, preferably at each, other location.

25 35. A viewing arrangement for use in a communications system as claimed in any one of Claims 1 to 32, comprising at least one image projecting device capable of being linked to an image-capturing device at a remote location, an observation zone for occupation by one or more participants, a three dimensional setting with visual depth cue means in the form of one or more physical objects viewable from that observation zone

and two-way mirror means interposed between that observation zone and the three dimensional setting, the arrangement being such that a captured image transmitted from said remote location to the image projecting device is projected for viewing of a remote participant(s) through the corresponding two-way mirror means in superimposed relation
5 with the three dimensional setting.

36. A communications system comprising at least one image projecting device capable of being linked to an image-capturing device at a remote location, an observation zone for occupation by one or more participants, a three dimensional setting with visual
10 depth cue means viewable from that observation zone and two-way mirror means interposed between that observation zone and the three dimensional setting, the arrangement being such that the remotely-captured images are projected onto a retroreflective screen located at the opposite side of the two-way mirror to the observation zone whereby the remotely-captured images are viewed in retroreflection at the
15 observation zone.

37. A communications system comprising at least one image projecting device capable of being linked to an image-capturing device at a remote location, an observation zone for occupation by one or more participants, a three dimensional setting with visual
20 depth cue means viewable from that observation zone and two-way mirror means interposed between that observation zone and the three dimensional setting, and means for tracking the eye position of a participant in the observation zone and means for adjusting the image-projecting devices in dependence upon such tracked positioning.

25 38. A system as claimed in Claim 37 in which the tracking means includes an item of headwear to be worn by a participant in use of the system.

39. A system as claimed in Claim 37 in which the tracking means includes camera means for observing the participant and means for analysing the images captured thereby to determine eye positioning.

5 40. A communications system for linking participants at two separate locations, comprising:

first and second locations each provided with at least one real time image capturing device, at least one image projecting device, an observation zone for occupation by a participant at that location and a two-way mirror through which images are viewed, the image capturing device(s) at each location being:

(a) arranged to view any participant occupying the home location observation zone directly or indirectly along a line of sight which passes through the two-way mirror, and

(b) linked to the image projecting device at the other location whereby the captured image is transmitted from the home location to the remote location and projected at the remote location for viewing through the corresponding two-way mirror, and

at least one location being provided with visual depth-cue means visible through the two-way mirror from the observation zone so that the remotely derived image of a remote participant is seen through the two-way mirror in superimposed relation within a three-dimensional setting afforded by said visual depth-cue means, and

the arrangement being such that the remotely-captured images are projected onto a retroreflective screen located at the opposite side of the two-way mirror to the observation zone whereby the remotely-captured images are viewed in retroreflection at the observation zone.

41. A communications system for linking participants at two separate locations, comprising:

first and second locations each provided with at least one real time image capturing device,
5 at least one image projecting device, an observation zone for occupation by a participant at that location and a two-way mirror through which images are viewed, the image capturing device(s) at each location being:

10 (a) arranged to view any participant occupying the home location observation zone directly or indirectly along a line of sight which passes through the two-way mirror, and

(b) linked to the image projecting device at the other location whereby the captured image is transmitted from the home location to the remote location and projected at the remote location for viewing through the corresponding two-way mirror, and

5 at least one location being provided with visual depth-cue means visible through the two-way mirror from the observation zone so that the remotely derived image of a remote participant is seen through the two-way mirror in superimposed relation within a three-dimensional setting afforded by said visual depth-cue means,
means being provided for tracking the eye position of a participant in the observation zone
0 and means for adjusting the image-projecting devices in dependence upon such tracked positioning.

42. A system as claimed in Claim 41 in which the tracking means includes an item of headwear to be worn by a participant in use of the system.

43. A system as claimed in Claim 41 in which the tracking means includes camera means for observing the participant and means for analysing the images captured thereby to determine eye positioning, the arrangement being such that the remotely-captured images are displayed so as to create a stereoscopic effect when viewed from the home observation zone.

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